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February 28, 1983

Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Attention: Ms. E. G. Adensam, Chief
Licensing Branch No. 4

Re: McGuire Nuclear Station
Unit 2
Docket No. 50-370

Dear Mr. Denton:

On January 17, 1983, the Commission amended its regulation concerning the environmental qualification of electric equipment important to safety for nuclear power plants, 10 CFR §50.49. This amendment became effective on February 22, 1983. As pertinent hereto, Section 50.49(i) requires that

> (i) Applicants for operating licenses that are to be granted on or after February 22, 1983, but prior to November 30, 1985, shall perform an analysis to ensure that the plant can be safely operated pending completion of equipment qualification required by this section. This analysis must be submitted to the Director of the Office of Nuclear Reactor Regulation for consideration prior to the granting of an operating license...

Duke Power Company is an applicant for the William B. McGuire Nuclear Station, Unit 2 operating license. Duke anticipates that it will receive a 5% power operating license on March 1, 1983; receipt of a full power license is anticipated on May 19, 1983. Duke is in the process of completing the qualification of equipment required by Section 50.49. Duke has previously provided information to the NRC concerning the status of equipment qualification by letters of February 23 and February 25, 1983. The present schedule calls for the completion of this qualification effort within the next several months. Accordingly, in order to obtain the McGuire Unit 2 operating license, Duke is required by Section 50.49(i) to perform an analysis to "ensure that the plant can be safely operated" pending completion of the above referenced qualification of equipment. Duke believes this justification can be provided in two steps, i.e., a 5% power justification and a full power justification. Inasmuch as the license that Duke anticipates receiving on March 1, 1983 will be a 5% power operating license, Duke today provides a justification that McGuire Unit 2 can be safety operated up to a 5% power level pending completion of the equipment qualification required by Section 50.49(i). This justification, in the form of analysis, is provided

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in Attachment 1. Duke is of the view that such analysis demonstrates that the provisions of Section 50.49(i) have been met with respect to operation at power levels not to exceed 5%.

Prior to receipt of authorization to exceed 5% power operation, Duke will provide a further analysis which will demonstrate, to the satisfaction of Section 50.49(i), that McGuire Unit 2 can operate safely up to full power level pending completion of equipment qualification required by Section 50.49.

Duke believes that the two-step justification fully conforms to the requirement of Section 50.49(i).

Very truly yours,

H. B. Tucker/BS

Hal B. Tucker

GAC/php
Attachment

cc: Mr. James P. O'Reilly, Regional Administrator
U. S. Nuclear Regulatory Commission
Region II
101 Marietta Street Suite 3100
Atlanta, Georgia 30303

Mr. W. T. Orders
NRC Resident Inspector
McGuire Nuclear Station

Attachment 1

McGuire Nuclear Station
Analysis of Plant Operation Assuming
Certain Accident Scenarios under 5% License

Zero-power physics testing at McGuire Unit 2 nominally includes operation at 3% power for four to six hours. Assuming an accident to occur at the end of a six hour period would therefore be the most limiting scenario from a decay heat point of view. Decay power immediately following reactor trip is about 6 mw and has decreased by almost a factor of ten in one hour. After one day the residual power level is extremely small--approximately 40 kw--while the total integrated heat input to the coolant during this 24 hour period is 14.3 million BTUs.

Two limiting accident scenarios were analyzed, a large loss-of-coolant accident (LOCA) with no emergency core cooling system (ECCS) available and a complete loss of all feedwater with no ECCS.

For the LOCA case, with only cold leg accumulators injecting, about 260 ft^3 of liquid would remain above the top of the core. Assuming an adiabatic heatup of this water from saturated conditions at atmospheric pressure, 1.5×10^7 BTUs are needed to boil this inventory away. Since this amount of heat will not have been added in the first 24 hours, more than one day would be available for damage control measures to be taken to ensure core cooling.

For the loss of all feedwater with no ECCS scenario the reactor coolant system (RCS) would pressurize to the pressurizer safety valve setpoint (2500 psia) and inventory would be relieved through the valves both as steam and liquid. The amount of power required to heat the RCS (excluding inventory in the pressurizer) from no-load conditions of 2250 psia and 557°F to saturation at 2250 psia is 5.4×10^7 BTUs. Although there will be some water relief due to thermal expansion of the coolant as it is heated, this can be safely neglected since the amount of heat generated in the first 24 hours is almost four times less than that required to heat the inventory to saturation. The actual time to uncover the core would be greater since 1) the inventory would have to be further heated to saturation at 2500 psia and then boiled away; and 2) the steam generator secondary side inventory would have to be boiled off before the adiabatic heatup could begin. Thus, the large LOCA is seen to be the limiting accident from a core cooling standpoint.

In summary, assuming the limiting accident (LOCA) were to occur during physics testing, more than 24 hours are available to correct any equipment deficiencies which could interrupt core cooling. Since the only activity planned under the 5% license is physics testing, the plant can be operated safely pending completion of equipment qualification.